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EXAMINER	
SALIARD, SHANNON S	
ART UNIT	**PAPER NUMBER**
3628	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/864,235	FUYAMA, SEIJI	
	Examiner	Art Unit	
	Shannon S. Saliard	3628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-8,13,14 and 16-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-8,13,14 and 16-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Applicant has amended claims 1, 2, 13, and 14. Claims 9-12 have been previously cancelled. No claims have been added. Thus, claims 1-3, 5-8, 13, 14, and 16-27 remain pending and are presented for examination.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 2, 5, 7, 13, 14, 16, and 17 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1 and 13** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per **claims 1 and 13**, the limitation "the polling signal being received by the on-vehicle device when the electric field strength of the polling signal at a position of the on-vehicle device is larger than a strength between the first electric field strength and the second electric field strength, the on-vehicle device passing from the quasi communication area to the standard communication area during the responses" as recited is vague and indefinite. It is unclear to the Examiner how the responses from

the on-vehicle device are communicated during the time when the on-vehicle device is passing from the quasi communication area to the standard communication area, if the on-vehicle device is already in the standard communication area when receiving the polling signal.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1, 3, 13, 19, and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rochester, Jr. et al [US 5,687,175] in view of Steeves [US 6,570,487] and Hassett et al [US 5,406,275].

As per **claim 1**, Rochester, Jr. et al discloses: a road-side device, (Col. 10, lines 7-10, remote units comprise stationary units located along the route); first means provided in the road-side device for transmitting a polling signal, (Col. 9, lines 27-28, receiving a first signal; second means provided in the road-side device for receiving a response of a single on-vehicle device to the polling signal transmitted by the first means, (Col. 9, lines 30-33, receiving first response signals by the central unit); third means, provided in the road-side device for deciding whether or not the second means

receives the response a plural number of times, (Col. 9 lines 47-48, receiving an acknowledgement signal from the central unit for a second data signal); and fourth means provided in the road-side device for starting next radio communications with the on-vehicle device in cases where the third means decides that the second means receives the response a plural number of times, (Col. 6, lines 29-37, shows if duplicate IDS are found, an acknowledgement packet signal is sent to the corresponding sensor, where the acknowledgement packet signal represents the next radio communication). In this claim, the first, second, third and fourth means are inherent with Rochester, Jr. et al since they disclose a system and method, and in order to carry out the functions of the method and process, the first, second, third, and fourth steps, first, second, third, and fourth means are completely necessary. Rochester, Jr. et al does not disclose that the road-side device receives a plurality of responses from a single-on vehicle device. However, Steeves discloses a radio tags (in-vehicle device) that is used to identify vehicles at tolls (col 1, lines 20-28), in which a reader (road-side device) sends an activation signal to any activated tags (polling, col 3, line 65-col 4, line 5) and the tag transmits a plurality of responses to polling signal (col 9, lines 23-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the system disclosed by Steeves to ensure that all the packets of information have been successfully transmitted. Rochester, Jr. et al does not further disclose the polling signal at a quasi communication area having an electric field strength between a first electric field strength and a second electric field strength larger than the first electric field strength, the polling signal at a

standard communication area having an electric field strength equal to or higher than the second electric field strength; and the polling signal being received by the on-vehicle device when the electric field strength of the polling signal at a position of the on-vehicle device is larger than a strength between the first electric field strength and the second electric field strength, the on-vehicle device passing from the quasi communication area to the standard communication area during the responses. However, Hassett et al discloses an antenna in a road-side device that radiates in a known activity pattern along three lanes; wherein in each lane there is a first area that has a an electric field between a first electric field strength and a second electric field strength greater than the first, and a second area having an electric field strength equal to or higher than the second electric field strength [Fig. 3; col 4, line 56-col 5, line 24]. Hassett et al further discloses that the transponder of the vehicle (on-vehicle device) remains inactive until it reaches the antenna field wherein the transponder begins processing the received signals (polling) [col 8, lines 13-19]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Hassett et al to avoid misallocating debits and to deter toll evaders, as suggested by Hassett et al [col 2, lines 1-2].

As per **claim 3**, Rochester, Jr. et al does not specifically disclose: wherein the second vehicle sensor is spaced from the first vehicle sensor at an interval of about 80 cm, but does show that the sensors are spaced along the lane in Figures 6-9. However, official notice is taken that it is old and well known in the vehicle detection art for the vehicle sensors to be spaced at intervals of about 80 cm. It would have been obvious to

one of ordinary skill in the art at the time of the applicant's invention to space the vehicle sensors at intervals of about 80 cm with the motivation of detecting a vehicle every 80 cm as it moves along the lane, and guaranteeing accurate measurements.

As per **claim 13**, Rochester, Jr. et al discloses: transmitting a polling signal from a road-side device, (Col. 9, lines 27-28, receiving a first signal; enabling the road-side device to receive a response of an on-vehicle device to the polling signal, (Col. 9, lines 30-33, receiving first response signals by the central unit); deciding whether or not the road-side device receives the response a plural number of times, (Col. 9 lines 47-48, receiving an acknowledgement signal from the central unit for a second data signal); and enabling the road-side device to start next radio communications with the on-vehicle device in cases where it is decided that the road-side device receives the response a plural number of times, (col. 6, lines 29-37, shows if duplicate IDs are found, an acknowledgement packet signal is sent to the corresponding sensor, where the acknowledgement packet signal represents the next radio communication). Rochester, Jr. et al does not disclose that the road-side device receives a plurality of responses from a single-on vehicle device. However, Steeves discloses a radio tags (in-vehicle device) that is used to identify vehicles at tolls (col 1, lines 20-28), in which a reader (road-side device) sends an activation signal to any activated tags (polling, col 3, line 65-col 4, line 5) and the tag transmits a plurality of responses to polling signal (col 9, lines 23-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the system disclosed by Steeves to ensure that all the packets of information have been

successfully transmitted. Rochester, Jr. et al does not further disclose the polling signal at a quasi communication area having an electric field strength between a first electric field strength and a second electric field strength larger than the first electric field strength, the polling signal at a standard communication area having an electric field strength equal to or higher than the second electric field strength; and the polling signal being received by the on-vehicle device when the electric field strength of the polling signal at a position of the on-vehicle device is larger than a strength between the first electric field strength and the second electric field strength, the on-vehicle device passing from the quasi communication area to the standard communication area during the responses. However, Hassett et al discloses an antenna in a road-side device that radiates in a known activity pattern along three lanes; wherein in each lane there is a first area that has a an electric field between a first electric field strength and a second electric field strength greater than the first, and a second area having an electric field strength equal to or higher than the second electric field strength [Fig. 3; col 4, line 56-col 5, line 24]. Hassett et al further discloses that the transponder of the vehicle (on-vehicle device) remains inactive until it reaches the antenna field wherein the transponder begins processing the received signals (polling) [col 8, lines 13-19]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Hassett et al to avoid misallocating debits and to deter toll evaders, as suggested by Hasset et al [col 2, lines 1-2].

As per **claims 19 and 24**, Rochester, Jr. et al does not disclose wherein the second means receives the plurality of responses without transmitting any signal to the on-vehicle device during the reception of the responses, and the fourth means starts the next radio communications with the on-vehicle device when the third means decides that the second means receives the responses without transmitting any signal to the on-vehicle device during the reception of the responses. However, Steeves discloses a radio tags (in-vehicle device) that is used to identify vehicles at tolls (col 1, lines 20-28), in which a reader (road-side device) sends an activation signal to any activated tags (polling, col 3, line 65-col 4, line 5) and the tag transmits a plurality of responses to polling signal unless an acknowledgment packet is received from the reader (col 9, lines 23-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the system disclosed by Steeves to ensure that all the packets of information have been successfully transmitted.

7. **Claims 2 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rochester, Jr. et al [US 5,687,175] in view of Tsuda [US 5,933,096] and Hassett et al [US 5,406,275].

As per **claim 2**, Rochester, Jr. et al discloses: a first vehicle sensor for detecting a vehicle at a first position on a lane, (Fig. 6, sensor 26 is located at a first position, w/ col. 9, lines 25-32, shows the transmission of a response signal by the remote unit

[contains sensors] upon detection of a signal sent by the central unit [mobile unit or vehicle], this represents detecting the vehicle, therefore, the vehicle is first detected at the location of sensor 26); a second vehicle sensor for detecting a vehicle at a second position on the lane which is adjacently ahead of the first position, (Fig. 6, sensor 30, which is shown to be located adjacently ahead of the first sensor 26 since the vehicle is moving from east to west, w/ col. 9, lines 25-32, shows the transmission of a response signal by the remote unit [contains sensors] upon detection of a signal sent by the central unit [mobile unit or vehicle] this represents detecting the vehicle, therefore, the vehicle is detected at the location of sensor 30 after its detection at the location of sensor 26); first means for transmitting a polling signal when the first vehicle sensor detects a vehicle, (Col. 9, lines 27-28, receiving a first signal); second means for receiving a response of an on-vehicle device to the polling signal transmitted by the first means, (Col. 9, lines 30-33, receiving first response signals by the central unit); and third means for, after the second means receives the response, starting next radio communications with the on-vehicle device in cases where both the first and second vehicle sensors detect a vehicle, (Col. 6, lines 29-37, shows if duplicate IDs are found, an acknowledgement packet signal is sent to the corresponding sensor, where the acknowledgement packet signal represents the next radio communication). In this claim, first, second, and third means are inherent with Rochester, Jr. et al since they disclose a system and method, and in order to carry out the functions of the method and process the first, second, and third means are completely necessary. Rochester, Jr. et al does not disclose a detecting a portion of a vehicle in a first position of a standard

communication area when an on-vehicle device of the vehicle is placed in the standard communication area or quasi communication area; detecting the portion of the vehicle at a second position of the standard communication area when the on-vehicle device of the vehicle is placed in the standard communication area; continuously transmitting a polling signal; and deciding whether or not both the first and second vehicle sensors detect the vehicle. However, Tsuda discloses using a first sensor and a second sensor to detect that a vehicle has entered the toll collection area wherein two antennae (inside the road-side device) start operating when a vehicle is detected by the entry sensor and stops operating when the vehicle is detected by the exit sensor [col 4, lines 25-31; lines 39-50; lines 55-62]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Tsuda so that tolls are only collected inside the toll collection area and that tariff is collected from the appropriate vehicle, as suggested by Tsuda [col 1, line 51-col 2, line 39]. Rochester, Jr. et al does not disclose an electric field strength of the polling signal at a quasi communication area having an electric field strength between a first electric field strength and a second electric field strength larger than the first electric field strength, the electric filed strength of the polling signal at a standard communication area having an electric field strength equal to or higher than the second electric field strength. However, Hassett et al discloses an antenna in a road-side device that radiates in a known activity pattern along three lanes; wherein in each lane there is a first area that has a an electric field between a first electric field strength and a second electric field strength greater than the first, and a second area having an electric

field strength equal to or higher than the second electric field strength [Fig. 3; col 4, line 56-col 5, line 24]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Hassett et al to avoid misallocating debits and to deter toll evaders, as suggested by Hassett et al [col 2, lines 1-2]. Furthermore, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, *In re Danly,* 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham,* 2 USPQ2d 1647 (Bd Pat. App. & Inter. 1987). Thus, the structural limitations of claim 2 are disclosed by Rochester, Jr. et al as described above. Also, as described above, the functional limitations in claim 2 do not distinguish the claimed apparatus from the prior art.

As per **claim 14**, Rochester, Jr. et al discloses: detecting a vehicle is at a first position on a lane, (Fig. 6, sensor 26 is located at a first position, w/ col. 9, lines 25-32, shows the transmission of a response signal by the remote unit [contains sensors] upon detection of a signal sent by the central unit [mobile unit or vehicle], this represents detecting the vehicle, therefore, the vehicle is first detected at the location of sensor 26); detecting a vehicle at a second position on the lane which is adjacently ahead of the first position, (Fig. 6, sensor 30, which is shown to be located adjacently ahead of the first Sensor 26 since the vehicle is moving from east to west, w/ col. 9, lines 25-32,

shows the transmission of a response signal by the remote unit [contains sensors] upon detection of a signal sent by the central unit [mobile unit or vehicle] this represents detecting the vehicle, therefore, the vehicle is detected at the location of sensor 30 after its detection at the location of sensor 26); transmitting a polling signal when a vehicle at the first position is detected, (Col. 9, lines 27-28, receiving a first signal), receiving a response of an on-vehicle device to the polling signal, (Col. 9, lines 30-33, receiving first response signals by the central unit); and after the response is received, starting next radio communications with the on-vehicle device in cases where both a vehicle at the first position and a vehicle at the second position are detected, (Col. 6, lines 29-37, shows if duplicate IDs are found, an acknowledgement packet signal is sent to the corresponding sensor, where the acknowledgement packet signal represents the next radio communication).

8. **Claims 5-8, 16, 17, 21, 22, 26, and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rochester, Jr. et al [U.S. 5,687,175] in view of Nagura et al [US 5,963,149].

As per **claim 5**, Rochester, Jr. et al discloses: an on-vehicle device, (Col. 10, lines 7-10, shows that central unit comprises a mobile unit traveling along a route); first means provided in the on-vehicle device for receiving data from a road-side device (Col. 9, lines 25-28, transmitting a first response signal from the remote units [represents the road-side device] to the central unit [which comprises a mobile unit]); second means

provided in the on-vehicle device for receiving a communication; signal from the road-side device after the first means receives the data therefrom, (Col. 6, lines 18-24, Acknowledgement Packet signal received and sensor placed into a wait state where it does not respond); and third means provided in the on-vehicle device for handling the data received by the first means as effective data regardless of whether or not the second means successfully receives the communication end signal, (col. 6, lines 29-30, sensors that successfully receive an acknowledgement Packet signal continue to respond to poll packets). Rochester, Jr. et al does not specifically disclose receiving a communication end signal representing an end of transmission of the data when the communication end signal transmitted from the road-side device reaches the on-vehicle device. However, Nagura discloses the response unit of a vehicle (i.e., on-vehicle device) transmits an integration response signal and upon receiving the interrogation response signal the transceiver (i.e., road-side device) transmits a termination signal for terminating the communication operation. Furthermore, Nagura discloses that the response unit of the vehicle receives a pilot signal and returns a pilot response signal and upon receiving the pilot response signal the transceiver transmits an interrogation signal such as write signal for performing toll collection [col 6, lines 25-41]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Nagura so that the on-vehicle device does not continue to communicate with the road-device to preserve the life of the on-vehicle device.

As per **claim 6**, Rochester, Jr. et al discloses: means provided in the road-side device for transmitting the communication end signal a plural number of times, (col. 4, lines 25-26, shows plural sensors, w/ col. 6, lines 34-36, shows that an Acknowledgement Packet Signal sent to the sensor, therefore, plural Acknowledgement Packet Signals are transmitted).

As per **claim 7**, Rochester, Jr. et al discloses: a road-side device, (Col. 10, lines 7-10, remote units comprise stationary units along the route); first means provided in the road-side device for receiving data from an on-vehicle device, (Col. 9, lines 27-28, receiving a first signal by remote units); and third means provided in the road-side device for handling the data received by the first means as effective data regardless of whether or not the second means successfully receives the communication end signal, (Col. 6, lines 29-30, sensors that successfully receive an acknowledgement Packet signal continue to respond to poll packets). Rochester, Jr. et al does not specifically disclose receiving a communication end signal representing an end of transmission of the data when the communication end signal transmitted from the road-side device reaches the on-vehicle device. However, Nagura discloses the response unit of a vehicle (i.e., on-vehicle device) transmits an integration response signal and upon receiving the interrogation response signal the transceiver (i.e., road-side device) transmits a termination signal for terminating the communication operation. Furthermore, Nagura discloses that the response unit of the vehicle receives a pilot signal and returns a pilot response signal and upon receiving the pilot response signal the transceiver transmits an interrogation signal such as write signal for performing toll

collection [col 6, lines 25-41]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Nagura so that the on-vehicle device does not continue to communicate with the road-device to preserve the life of the on-vehicle device. In this claim, first, second, and third means are inherent since there is a system and method, and in order to carry out the functions of the method and process the first, second, and third means are completely necessary.

As per **claim 8**, Rochester, Jr. et al discloses: further comprising means provided in the on-vehicle side device for transmitting the communication end signal a plural number of times, (col. 4, lines 25-26, shows plural sensors, w/ col. 6, lines 34-36, shows that an Acknowledgement Packet Signal sent to the sensor, therefore, plural Acknowledgement Packet Signals are transmitted).

As per **claim 16**, Rochester, Jr. et al discloses: receiving data from an on-vehicle device, (Col. 9, lines 27-28, receiving a first signal by remote units); and handling the received data as effective data regardless of whether or not the communication end signal is successfully received, (Col. 6, lines 29-30, sensors that successfully receive an acknowledgement Packet signal continue to respond to poll packets). Rochester, Jr. et al does not specifically disclose receiving a communication end signal representing an end of transmission of the data when the communication end signal transmitted from the road-side device reaches the on-vehicle device. However, Nagura discloses the response unit of a vehicle (i.e., on-vehicle device) transmits an integration response signal and upon receiving the interrogation response signal the transceiver (i.e., road-

side device) transmits a termination signal for terminating the communication operation. Furthermore, Nagura discloses that the response unit of the vehicle receives a pilot signal and returns a pilot response signal and upon receiving the pilot response signal the transceiver transmits an interrogation signal such as write signal for performing toll collection [col 6, lines 25-41]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Nagura so that the on-vehicle device does not continue to communicate with the road-device to preserve the life of the on-vehicle device.

As per **claim 17**, Rochester, Jr. et al discloses: first means for receiving data from a road-side device, (Col. 9, lines 25-28, transmitting a first response signal from the remote units [represents the road-side device] to the central unit [which comprises a mobile unit]); and third means for handling the data received by the first means as effective data regardless of whether or not the second means successfully receives the communication end signal, (Col. 6, lines 29-30, sensors that successfully receive an acknowledgement Packet signal continue to respond to poll packets). Rochester, Jr. et al does not specifically disclose receiving a communication end signal representing an end of transmission of the data when the communication end signal transmitted from the road-side device reaches the on-vehicle device. However, Nagura discloses the response unit of a vehicle (i.e., on-vehicle device) transmits an integration response signal and upon receiving the interrogation response signal the transceiver (i.e., road-side device) transmits a termination signal for terminating the communication operation.

Furthermore, Nagura discloses that the response unit of the vehicle receives a pilot signal and returns a pilot response signal and upon receiving the pilot response signal the transceiver transmits an interrogation signal such as write signal for performing toll collection [col 6, lines 25-41]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Nagura so that the on-vehicle device does not continue to communicate with the road-device to preserve the life of the on-vehicle device.

As per **claims 21, 22, 26, and 27**, Rochester, Jr. et al does not explicitly disclose wherein the third means ends communication with the road-side device after handling the data as effective data. However, Rochester, Jr. et al discloses that each sensor (road-side device) polled transmits its data using a Data Packet signal. Upon receipt of a Data Packet from a senor, the mobile unit (on-vehicle device) transmits an Acknowledge Packet signal to the sensor informing it that its data has been successfully received...Upon receipt of the Acknowledge Packet, a sensor is placed into a wait state whereby it will not respond to Poll Packets (from the mobile unit) for a specified period of time" [col 6, lines 17-24]. Rochester, Jr. et al further discloses that the Acknowledge Packet Signal contains information (data) sent from the mobile unit to an individual sensor [col 5, lines 1-10]. Furthermore, Nagura discloses that response unit transmits a termination response signal [col 6, lines 31-41]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the third means ends communication with the road-side

device after handling the data as effective data so that the on-vehicle device does not continue to communicate with the road-device to preserve the life of the on-vehicle device.

9. **Claims 18 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rochester, Jr. et al [U.S. 5,687,175] in view of Steeves [U.S. 6,570,487] as applied to claim 1 above, and further in view of Maeda et al [US 5,926,546].

As per **claims 18 and 23**, Rochester, Jr. et al does not disclose wherein the fourth means implements an accounting process for the on-vehicle device in the radio communications. However, Maeda et al discloses reading out account data from the IC Card that is located in the vehicle [col 20, lines 17-25]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Maeda et al to automatically charge the user for usage of the toll [col 1, lines 32-36].

10. **Claims 20 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rochester, Jr. et al [US 5,687,175] in view of Tsuda [US 5,933,096] and Hassett et al [US 5,406,275] as applied to claims 2 and 14 above, and further in view of Maeda et al [US 5,926,546].

As per **claims 20 and 25**, Rochester, Jr. et al does not disclose wherein the fourth means implements an accounting process for the on-vehicle device in the radio

communications. However, Maeda et al discloses reading out account data from the IC Card that is located in the vehicle [col 20, lines 17-25]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Rochester, Jr. et al to include the method disclosed by Maeda et al to automatically charge the user for usage of the toll [col 1, lines 32-36].

Conclusion

Examiner's Note: Examiner has cited particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that the applicant, in preparing the responses, fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shannon S. Saliard whose telephone number is 571-272-5587. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Hayes can be reached on 571-272-6708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JOHN W. HAYES
SUPERVISORY PATENT EXAMINER

Shannon S Saliard
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Art Unit 3628

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